

**WIRELESS MULTI-HOP SYSTEM WITH MACROSCOPIC MULTIPLEXING**

**ABSTRACT OF THE DISCLOSURE**

A method, device, and system in which radio links between relays and users are optimized separately from the links between relays and base stations and in which multiple simultaneous data streams between relays and base stations are created. The system includes transceivers of at least three kinds with two kinds of radio interfaces. The first kind of transceiver, a base station (BS), is connected to the core network with a link of wire line quality. The second kind, a relay station (RS), is connected to the BS with a first radio interface, and to the third kind, the user equipment (UE), with a second radio interface. The first and second radio interfaces can operate, at least in part, using the same frequency bandwidth. The UE can also connect directly to the BS using the second radio interface if the BS is closer than any RS.